THE FEMALE G-SPOT: ANATOMICAL FACT OR FANTASY?

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Abstract

Ever since its existence was suggested by Ernst Gräfenberg in the 1940s, the eponymous G-spot remains a controversial topic among anatomists, gynecologists, sexual medicine specialists, and self-proclaimed sexologists. Its assumed localization on the anterior vaginal wall, 50 to 80 mm from the introitus, has been established predominantly relying on self-report, questionnaires, and vaguely reasoned functional tests, all contributing toward the notion that a functionally important for the female orgasm zone indeed exists on the anterior vaginal wall.

Despite those statements are not based on the proven fact of the presence of a discrete anatomical structure, numerous reports have speculated about possible muscular, vascular, and even neural peculiarities of the region, contributing to its functional importance. However, even though the distal anterior wall of the vagina is a highly sensitive area, included in the morphofunctional clitourethrovaginal (CUV) complex, the existence of the G-spot as a separate morphological entity is yet to be proven.

The present report reviews the reports regarding the morphological essence of the G-spot and summarizes the available data on the anatomy of the anterior vaginal wall.

Key words: *Gräfenberg spot; G-spot; anterior vaginal wall;*

Introduction

According to the widespread definition the G-spot is "a sensitive area of the anterior wall of the vagina believed by some to be highly erogenous and capable of ejaculation" (Oxford Dictionary of English Language, 2016). Due to its anecdotal practical importance, its existence and precise location have become a common topic among sexologists, gynecologists, self-proclaimed sex experts, and lay people. A survey among adult females reported that 84% of the respondents are convinced in the existence of a highly sensitive area in the vagina, despite no consensus was met about its precise location (Davidson et al., 1989). Furthermore, only a tiny fraction of them reported having personal experience confirming its existence while the vast majority relied on unspecified third-party sources of information. In general, no consistent evidence for the existence of a discrete anatomical structure, which could be identical with the so called G-spot could be provided (Kilchevsky et al., 2012).The unconfirmed nature of a putative highly sensitive area of the distal vagina requires an unbiased review of the available data. The present paper is a brief review from the anatomists' point of view, regarding the functional morphology of the distal vagina and the presumed highly sensitive areas in it.

History of the G-spot

The concept of the G-spot emerges for the very first time in the works of the German gynecologist Ernest Gräfenberg (later anglicized as Grafenberg). In his seminal paper "The role of urethra in female orgasm" (Grafenberg, 1950) he speaks with conviction about a "highly erotic zone" on the anterior vaginal wall of all women, parallel to the urethra, stimulation of which causes intense sexual pleasure and contributes to orgasm, going as far as attributing this zone with a functional role superior to the one of the clitoris. However, being a clinical gynecologist, Grafenberg did not describe the morphological basis of said zone.

The term “G-spot” was coined some 30 years later by Addiego et al. (1981) in recognition of Ernest Grafenberg's work. The spot was described in the same location, as a palpable swelling structure along the course of the urethra, stimulation of which contributed to “deeper” orgasms and an ejaculation-like emission of fluid from the urethral orifice upon reaching orgasm. Blinded to the description by Grafenberg, examining physicians speculated about the anatomical nature of this structure, which was suspected to be a sphincter, a urethral caruncle, or a structure homologous to the prostate. When confronted with the information of the presumed G-spot, they recognized it as such, without further elaboration of its anatomical nature. The presence of a structural peculiarity of the anterior wall of the vagina in form of a circumscribed swelling zone was once again noted (Davidson et al, 1985), however, this was not observed in all women examined, and no association between fluid emissions during orgasm and the presence, resp. absence of said structure, could be established.

Anatomy of the anterior vaginal wall

The human vagina is a fibromuscular tube extending between the vestible and the uterus, with its anterior wall being shorter (7,5 cm) than the posterior (9 cm). The structure of its wall follows the general principle of an innermost tunica mucosa (stratified nonkeratinized epithelium), resting on a lamina propria, containing numerous thin-walled veins, fimrly atttached to the underlying tunica muscularis. Macroscopically, two median longitudinal ridges (anerior and posterior) could be observed, with numerous transverse rugae extending from them. The organ is supplied with blood by the vaginal, uterine, internal pudendal and middle rectal arteries, and is drained via the vaginal veins, which are formed by venous plexuses. Innervation is supplied by the uterovaginal and hypogastric plexuses and pelvic splanchnic nerves, with the lower part of the vagina innervated by the pudendal nerve. Lot of the nerve fibers are parasympathetic, being vasodilatatory to the erectile tissue of the vestibular bulbs and clitoris. (Stranding, 2005).

Nerve fibers could be detected in the lamina propria and in the tunica muscularis, but not in the vaginal epithelium. Numerous microvessels could be observed in the lamina propria and muscle layer of the anterior vaginal wall. Some differences in the neurovasucular density between distal and proximal third of the anterior vaginal wall could be detected, where the distal-third possibly has a richer innervation and blood supply by a denser microvascular bed (Li et al., 2014).

The anterior vaginal wall also contains the lesser paraurethral glands, known as Skene's glands – small tubules, parallel to the urethra, draining into the urethra close to its external orifice. They are homologous to the male prostate (Zaviacic et al., 2010) and during sexual arousal emit secretions similar to the secretions of the male prostate (Teppert et al., 1984; Wernert et al., 1992). Those glandular structures are highly suspicious to be the source of orgasmic fluid expulsions. Furthermore, they are concurrent with Crooks and Baur’s (2010) concept of the G-spot, allegedly being a system of glands and ducts. No reports, however, hint towards peculiarities of the sensory innervation and/or blood supply of these glands, which could explain the observed swelling and sensations upon stimulation of the area.

The pars intermedia is a part of the vulva, found between the corpora cavernosa and the corpora spongiosum of the clitoral bulbs. Its histological structure features large blood-filled spaces, the veins of Kobelt's plexus (Kobelt, 1978), connecting different vascular components of the vulva, and embedded in dense collagen-rich stroma. The pars intermedia is comprised of non-erectile tissue, however its veins are seen to penetrate the tunica albuginea of the erectile vulvar

components. It could be speculated that it may be involved in a coordinated vascular response during sexual arousal (Shih et al., 2013). Its location – closely associated with the anterior vaginal wall – could lead to the assumption that its veins could also drain part of the vagina and be associated with the venous plexuses of the vaginal wall. Such association is yet to be demonstrated. The non-circumscribed nature of the pars intermedia could also cause the impression of extending towards the vagina and, in some individuals, be assumed to be a part or the essence of the G-spot.

Individual reports claim the discovery of an anatomical structure (Ostrzenski, 2012; Ostrzenski et al., 2014) being the G-spot itself: a cylindrical structure of grape-like vessels, confined in a few millimeter sac, found underneath the epithelial lining of the anterior wall of the vagina, roughly 4,5 cm from the introitus, on one of the sides of the urethra. Authors describe association of those vessels with nerve fibers and go as far as demonstrating a nerve ganglion in the anterior vaginal wall. While the nerve ganglion might indeed be an intramural vegetative ganglion, the presence of the neurovascular structures described should be independently demonstrated (Puppo, 2014) and its functional role further elucidated (Leung, 2015).

Concluding remarks

While indeed a difference between the innervation of the distal third and the proximal two thirds of the vagina could be demonstrated, they should be attributed to the different embryological origin of those structures – the urogenital sinus and the Müllerian ducts, respectively. The notion that a number of both genital and non-genital stimuli could lead to orgasm (Stoleru et al., 2012) combined with the complex and intricate anatomy of the female genitalia should point that the existence of a single, highly innervated and extremely erotic structure is highly unlikely. However, the morphological studies lead towards the assumption, that the G-spot does not constitute a spot per se, but is rather a larger zone, including different structures in their functional unity. Until the claims of discrete neurovascular entities in the vaginal wall are confirmed and their origin and afferences – clarified, one should refer to the distal vagina as a part of the functional clitourethrovaginal complex (O'Connell et al., 2008). Even under this broad category, the precise definition of a G-spot remains controversial. Only highly detailed and precise morphological and functional studies could accept or reject the claims of its existence.

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